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09/771,137	01/24/2001	Bruce A. Judson	PA000220	6736

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Patents Department
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EXAMINER	
BHATTACHARYA, SAM	
ART UNIT	**PAPER NUMBER**
2687	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/771,137	JUDSON, BRUCE A.	
	Examiner	Art Unit	
	Sam Bhattacharya	2687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 24-25, 27, 32-37, 39, and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. (US 6,421,005) in view of Shurvinton (US 2003/0050071 A1).

As to claim 24, the Weaver reference discloses a method comprising the steps of:

forming a plurality of antenna beam patterns, each of the antenna beam patterns being directed to a different user (see Col. 5, line 63 to Col. 6, line 22. "Based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37). As interpreted by examiner, the position of the wireless mobile unit is used for adjustment to the antenna array ("forming/adjusting antenna beam pattern") to communicate and minimize interference to a particular user with respect to ("to the exclusion of") the other users);

determining a statistic for each of the different users ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal

information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "By providing such location or position information along with the signal information (such as signal strength, measurements, transmit power, etc.), antenna component configuration adjustment can be made to minimize interference and call droppage and maximize coverage" (Col. 5, line 63 to Col. 6, line 1));

narrowing each of the antenna beam patterns based on the statistics for the users ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "By providing such location or position information along with the signal information (such as signal strength, measurements, transmit power, etc.), antenna component configuration adjustment can be made to minimize interference and call droppage and maximize coverage" (Col. 5, line 63 to Col. 6, line 1). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37)).

However, Weaver et al. fails to disclose narrowing each of the antenna beam patterns based solely on the statistic of the user to which each of the antenna beam patterns is respectively

directed. In an analogous art, Shurvinton discloses a method of channel allocation in which an antenna beam is narrowed for a user based solely on a statistic (related to voice and data capacity) of the user to which the antenna beam pattern is directed. See FIG. 2, paragraph [0002], lines 1-10, paragraph [0017], lines 14-17 and paragraph [0018], lines 14-23. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver by narrowing the antenna beam based solely on a statistic of the user to which the antenna beam pattern is directed, as taught by Shurvinton, for the purpose of maintaining a reasonable carrier-to-interference ratio for the voice and data channels of the system to ensure that the operation of the system does not fall below an acceptable level.

As to claim 25, the Weaver reference discloses the method of claim 24 further comprising storing the antenna beam patterns ("in "tuning" or reconfiguring the antenna components of the cylindrical antenna array 100, neighbor sets are developed and stored in memory 220 of controller 200" (Col. 4, lines 55-57)).

As to claims 27 and 39, the Weaver reference discloses the control signal comprises a power control signal ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) determining the statistic of different users; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35)).

As to claim 32, the Weaver reference discloses the method of claim 24 wherein the antenna beam pattern is formed using an adaptive antenna array ("cylindrical base station

antenna arrays which are initially set up based upon mathematical parameters, and which can easily be adjusted or adapted in various ways so as to minimize interference and maximize coverage within a cell and between neighboring cells" (Col. 3, lines 35-39)).

As to claims 33 and 44, the Weaver reference discloses the communicating with one of the different users over a forward link of a wireless communication system ("the beam patterns 30A-C as shown in FIG. 1 dictate the area or sector from which information can be received from wireless communication units and to which information can be sent" (Col. 1, lines 28-31). As interpreted by examiner, forward link refers to transmission from the base station to a mobile unit. The beam patterns transmit information from the base station to a mobile unit).

As to claims 34 and 45, the Weaver reference discloses the wireless communication system comprises a wideband code division multiple access communication system ("to fully take advantage of the large capacity and essentially soft limit provided to wireless systems by CDMA technology for example, the load on each of the antenna components of the cell is monitored" (Col. 7, lines 25-28)).

As to claim 35, Figure 4 in Weaver shows a system comprising:

an antenna (100) configured to generate an antenna beam pattern directed to different users and to communicate with a single user to the exclusion of all other users (see Col. 5, line 63 to Col. 6, line 22. "Based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-

35). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37). As interpreted by examiner, the position of the wireless mobile unit is used for adjustment to the antenna array ("forming/adjusting antenna beam pattern") to communicate and minimize interference to a particular user with respect to ("to the exclusion of") the other users);

a signal statistic computation module (200) configured to determine a statistic for each of the different users ("this position and signal for a given base station is preferably received and monitored in a location remote to a controller 200 of the base station. Using this information, antenna component configuration parameters for reconfiguring antenna components of a corresponding cylindrical antenna array 100 are determined" (Col. 6, lines 1-6)); and

an antenna beam pattern optimizing module (200) configured to narrowing each of the antenna beam patterns based on the statistics for the users ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "By providing such location or position information along with the signal information (such as signal strength, measurements, transmit power, etc.), antenna component configuration adjustment can be made to minimize interference and call droppage and maximize coverage" (Col. 5, line 63 to Col. 6, line 1). "For example, the

controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37)).

However, Weaver et al. fails to disclose narrowing each of the antenna beam patterns based solely on the statistic of the user to which each of the antenna beam patterns is respectively directed. In an analogous art, Shurvinton discloses a method of channel allocation in which an antenna beam is narrowed for a user based solely on a statistic (related to voice and data capacity) of the user to which the antenna beam pattern is directed. See FIG. 2, paragraph [0002], lines 1-10, paragraph [0017], lines 14-17 and paragraph [0018], lines 14-23. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver by narrowing the antenna beam based solely on a statistic of the user to which the antenna beam pattern is directed, as taught by Shurvinton, for the purpose of maintaining a reasonable carrier-to-interference ratio for the voice and data channels of the system to ensure that the operation of the system does not fall below an acceptable level.

As to claim 36, the Weaver reference discloses the system of claim 35 wherein the antenna comprises an adaptive antenna array module configured to output and direct the antenna beam pattern to the single user ("cylindrical base station antenna arrays which are initially set up based upon mathematical parameters, and which can easily be adjusted or adapted in various ways so as to minimize interference and maximize coverage within a cell and between neighboring cells" (Col. 3, lines 35-39)).

As to claim 37, Figure 1 in Weaver discloses the system of claim 35 further comprising an antenna beam pattern storing module 220 configured to store the antenna beam pattern ("in "tuning" or reconfiguring the antenna components of the cylindrical antenna array 100, neighbor sets are developed and stored in memory 220 of controller 200" (Col. 4, lines 55-57)).

3. Claims 26 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. in view of Shurvinton and Densmore et al. (U.S. Patent RE37,218).

As to claims 26 and 38, the combination of Weaver and Shurvinton discloses the method of claim 24 and the system of claim 35, wherein the statistic is utilized to narrow the antenna beam pattern (see (see Col. 4, lines 28-35, Col. 5, line 63 to Col. 6, line 1, and Col. 7, lines 33-37)). However, it does not disclose using a dithering algorithm to narrow the antenna beam pattern. The Densmore reference teaches using a dithering algorithm ("the dithering algorithm referred to above involves rocking the antenna sinusoidally in azimuth angle 1 deg in each direction at a 2 Hz rate. The satellite sends a special pilot signal for antenna tracking. By correlating the received pilot signal level sensed by the receiver with the commanded dithering of the antenna angle, the antenna controller computer determines the sign and magnitude of any pointing error" (Col. 8, lines 58-65)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver and Shurvinton to use a dithering algorithm to narrow the antenna beam pattern, as taught by Densmore, in order to dynamically adjust the beam configuration to minimize interference.

4. Claims 29-31 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. in view of Shurvinton and Spaling et al. (U.S. Patent Application Publication 2002/0077111 A1).

As to claims 29 and 41, the combination of Weaver and Shurvinton discloses the method of claim 24 and the system of claim 35. However, it does not disclose the statistic of one of the different users comprises an average of the control signal over a specified interval of time. The Spaling reference teaches an average of values over a specified interval of time. "An averager 202 (Figure 7) may be used optionally to average the value generated by the counter 200" (page 5, col. 2, paragraph [0046], lines 6-8). "The average is taken of values received within a certain time window" (page 5, col. 2, paragraph [0047], lines 11-12).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver and Shurvinton wherein the statistic comprises an average of the control signal over a specified interval of time, as taught by Spaling, in order to effectively smooth out any abrupt, momentary changes in values.

As to claims 30 and 42, the combination of Weaver and Shurvinton discloses the method of claim 24 and the system of claim 35. However, it does not disclose the statistic from one of the different users comprises a running average of the control signal. The Spaling reference teaches computing a running average. "A sliding averager 216 (Figure 8) may be used to average the value generated by the counter 210 using a sliding window technique" (page 5, col. 2, paragraph [0047], lines 7-9). "As the window "moves" in time, older values are discarded and newer values are observed" (page 5, col. 2, paragraph [0047], lines 12-14).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver and Shurvinton wherein the statistic comprises a running average of the control signal, as taught by Spaling, in order to effectively smooth out any abrupt, momentary changes in values.

As to claims 31 and 43, the combination of Weaver and Shurvinton discloses the method of claim 24 and the system of claim 35. However, it does not disclose the statistic comprises a weighted average of the control signal. The Spaling reference teaches a weighted average. "FIG. 9 illustrates another example implementation of the invention where the transmit power control commands are "weighted" to reflect the different degrees to which those commands will likely impact the cell load/congestion condition" (page 6, col. 1, paragraph [0051], lines 1-5). "The weights are multiplied by their corresponding transmit power control command, either positive or negative. The weighted commands are selectively added in the weighted TPC command processor 302 to generate a transmit power control command "up" value and a transmit power control command "down" value" (page 5, col. 1, paragraph [0052], lines 11-16).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver and Shurvinton wherein the statistic comprises a weighted average of the control signal, as taught by Spaling, in order to reflect the different degrees each control signal measurement will likely impact the overall average value.

5. Claims 28 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. in view of Shurvinton and Padovani et al. (U.S. Patent 6,574,211).

As to claims 28 and 40, the combination of Weaver and Shurvinton discloses the method of claim 24 and the system of claim 35. However, it does not disclose the control signal comprises a data rate control signal. The Padovani reference teaches the control signal comprises a data rate control signal "the C/I that any given user's mobile station achieves determines the information rate that can be supported for this particular link from the base station to the user's mobile station" (Col. 3, lines 9-12). "In the exemplary embodiment, at every time slot, the mobile station transmits to the selected base station on a dedicated data request (DRC) channel a request for transmission at the highest data rate which the measured C/I can reliably support. The selected base station transmits data, in data packets, at a data rate not exceeding the data rate received from the mobile station on the DRC channel" (Col. 4, lines 34-41).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver and Shurvinton wherein the control signal comprises a data rate control signal, as taught by Padovani, in order to communicate from the mobile station to the serving base station the optimum data rate that can be supported.

Response to Arguments

6. Applicant's arguments with respect to claims 24-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Bhattacharya whose telephone number is (571) 272-7917. The examiner can normally be reached on Weekdays, 9-6, with first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sb

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PRIMARY EXAMINER